

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions of claims in the application.

Claim 1 (Currently Amended): A printer firmware installation method for installing firmware from an upper-level apparatus to a printer through a network comprising the steps of:

receiving each block of said firmware consisting of a plurality of blocks;

storing said each received block to a memory;

judging a guarantee range of the installed blocks using the data stored in said memory when resuming said installation after an interruption of said installation by using a check sum for checking that received data has been accurately stored for each installed block; and

informing said judged guarantee range to said upper-level apparatus to resume said installation;

informing an installation interruption to said upper-level apparatus from said printer;

informing an installation resumption to said upper-level apparatus from said printer; and

printing print data and interrupting said installation when receiving said print data and informing said upper-level apparatus of said interruption signal.

Claim 2 (Original): The printer firmware installation method according to claim 1, further comprising the step of:

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resuming to install said firmware to said printer from the succeeding transfer block of the guarantee range in accordance with said guarantee range.

Claim 3 (Previously Presented): The printer firmware installation method according to claim 1, wherein said receiving step comprises a step of receiving firmware management information and each block of the firmware entity,

and wherein said judging step comprises a step of judging said guarantee range of said installed blocks using said received management information and data stored in said memory.

Claim 4 (Previously Presented): The printer firmware installation method according to claim 3, wherein said receiving step comprises:

a first reception step of receiving said firmware management information; and

a second reception step of receiving said each block of the firmware entity,

and wherein said judging step comprises a step of judging said guarantee range of said installed blocks using said received management information and data stored in said memory.

Claim 5 (Previously Presented): The printer firmware installation method according to claim 3, wherein said receiving step comprises a step of receiving blocks each consisting of firmware management information on said each firmware block and the firmware entity,

and wherein said judging step comprises a step of judging said guarantee range of said installed blocks using management information extracted from said each received block and data stored in said memory.

Claim 6 (Cancelled).

Claim 7 (Currently Amended): A printer for printing data to print medium based on control according to a firmware comprising:

memory that stores said firmware;

communication unit that receives each block of said firmware consisting of a plurality of blocks from a upper-level apparatus; and

processor that processes said received block, storing into said memory,

wherein, said processor judges a guarantee range of the installed blocks using a data stored in said memory when resuming said installation after an interruption of said installation by using a check sum for checking that received data has been accurately stored for each installed block, and informs said upper-level apparatus of said guarantee range to resume said installation;

wherein said processor informs said upper-level apparatus of an installation interruption signal; and informs said upper-level apparatus of an installation resumption signal; and

wherein said processor starts to print said print data and interrupts said installation when receiving a print data, and informs said upper-level apparatus of said interruption signal.

Claim 8 (Previously Presented): The printer according to claim 7,
wherein said communication unit receives firmware management information and each
block of the firmware entity, and
said processor judges a guarantee range of said installed blocks using said received
firmware management information and data stored in said memory.

Claim 9 (Previously Presented): The printer according to claim 8,
wherein said processor stores said received firmware management information into said
memory, receives each block of the firmware entity, and judges said guarantee range of said
installed blocks using said received firmware management information and data stored in said
memory.

Claim 10 (Previously Presented): The printer according to claim 8,
wherein said processor receives blocks each comprising of firmware management
information on said each firmware block and the firmware entity; extracts said firmware
management information to store into said memory; and judges said guarantee range of said
installed blocks using said firmware management information extracted from said each received
block and data stored in said memory.

Claim 11-13 (Cancelled).

Claim 14 (Currently Amended): A printer system comprising:

a printer for printing according to a print order received through a network; and
upper-level apparatus for installing firmware to said printer through said network,
wherein said printer comprises:

memory that stores said received firmware consisting of a plurality of blocks;

communication unit that receives each block of said firmware consisting of a plurality of
blocks from said upper-level apparatus; and

processor that processes said received block and storing into said memory after the
reception,

wherein said processor judges a guarantee range of the installed blocks using a data stored
in said memory when resuming said installation after an interruption of said installation by using
a check sum for checking that received data has been accurately stored for each installed block,
and informs said upper-level apparatus of said guarantee range, and

wherein said upper-level apparatus restarts to install said firmware from the succeeding
transfer block of said guarantee range;

wherein said processor informs said upper-level apparatus of an installation interruption
signal; and informs said upper-level apparatus of an installation resumption signal; and

wherein said processor starts to print said print data and interrupts said installation when receiving a print data, and informs said upper-level apparatus of said interruption signal.

Claim 15 (Previously Presented): The printer system according to claim 14, wherein said upper-level apparatus sends firmware management information and said each block of the firmware entity to said printer; and

said printer judges said guarantee range of said installed blocks using said received firmware management information and data stored in said memory.

Claim 16 (Previously Presented): The printer system according to claim 15, wherein said upper-level apparatus sends said firmware management information; and then sends said each block of the firmware entity; and

said printer judges said guarantee range of said installed blocks using said received firmware management information and data stored in said memory.

Claim 17 (Previously Presented): The printer system according to claim 15, wherein said upper-level apparatus sends blocks each consisting of said firmware management information on each firmware block and the firmware entity; and

said printer judges said guarantee range of said installed blocks using said firmware management information extracted from said received block and data stored in said memory.

Claim 18 (Original): The printer system according to claim 14, wherein said upper-level apparatus interrupts said installation according to an interruption signal received from said printer; and resumes said installation according to a resumption signal received from said printer.

Claim 19 (Original): The printer system according to claim 18, wherein said printer starts to print said print data when detecting to receive print data; and informs said upper-level apparatus of said interruption signal.

Claim 20 (Original): The printer system according to claim 18, wherein said printer performs a processing corresponding to a printer operation in response with said printer operation; and informs said upper-level apparatus of said interruption signal.

Claim 21 (New): A printer for printing data to print medium based on control according to a firmware comprising:

memory that stores said firmware;

communication unit that receives each block of said firmware consisting of a plurality of blocks from a upper-level apparatus; and

processor that processes said received block, storing into said memory,

wherein, said processor judges a guarantee range of the installed blocks using a data stored in said memory when resuming said installation after an interruption of said installation by using a check sum for checking that received data has been accurately stored for each installed block, and informs said upper-level apparatus of said guarantee range to resume said installation;

wherein said processor informs said upper-level apparatus of an installation interruption signal; and informs said upper-level apparatus of an installation resumption signal; and

wherein said processor performs a processing corresponding to a printer operation and interrupts said installation when detecting said printer operation; and informs said upper-level apparatus of said interruption signal.

Claim 22 (new): A printer firmware installation method for installing firmware from an upper-level apparatus to a printer through a network comprising the steps of:

receiving each block of said firmware consisting of a plurality of blocks;

storing said each received block to a memory;

judging a guarantee range of the installed blocks using the data stored in said memory when resuming said installation after an interruption of said installation by using a check sum for checking that received data has been accurately stored for each installed block;

informing said judged guarantee range to said upper-level apparatus to resume said installation;

informing an installation interruption to said upper-level apparatus from said printer;

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informing an installation resumption to said upper-level apparatus from said printer; and
processing corresponding to a printer operation and interrupting said installation when
detecting said printer operation and informing said upper-level apparatus of said interruption
signal.

Claim 23 (New): A printer system comprising:

a printer for printing according to a print order received through a network; and
upper-level apparatus for installing firmware to said printer through said network,
wherein said printer comprises:
memory that stores said received firmware consisting of a plurality of blocks;
communication unit that receives each block of said firmware consisting of a plurality of
blocks from said upper-level apparatus; and
processor that processes said received block and storing into said memory after the
reception,
wherein said processor judges a guarantee range of the installed blocks using a data stored
in said memory when resuming said installation after an interruption of said installation by using
a check sum for checking that received data has been accurately stored for each installed block,
and informs said upper-level apparatus of said guarantee range,
wherein said upper-level apparatus restarts to install said firmware from the succeeding
transfer block of said guarantee range;

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wherein said processor informs said upper-level apparatus of an installation interruption signal; and informs said upper-level apparatus of an installation resumption signal; and

wherein said processor performs a processing corresponding to a printer operation and interrupts said installation when detecting said printer operation; and informs said upper-level apparatus of said interruption signal.